

Remarks/Arguments

Applicants have received and carefully reviewed the Office Action of the Examiner mailed April 15, 2009. Currently, claims 29, 31-34, 36-37, 39-45, 47-56, and 58-70 remain pending. Claims 29, 31-34, 36-37, 39-45, 47-56, and 58-70 have been rejected. With this Amendment, claim 32 has been amended. Favorable consideration of the following remarks is respectfully requested.

Claim Rejections – 35 USC § 112

In paragraph 3 of the Office Action, claim 32 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the Examiner indicated that it is unclear whether the catalyst can include one of carbon or platinum or if it must include both carbon and platinum. To further clarify, Applicants have amended the phrase “carbon/platinum” to “carbon and/or platinum”. As such, Applicants believe it is clear that the catalyst in claim 32 can include either carbon or platinum, or both. Withdrawal of the rejection is respectfully requested.

Claim Rejections – 35 USC § 103

In paragraph 7 of the Office Action, claims 29, 31-34, 36, 37, 39-45, 47, 48, 54-56, and 58-70 were rejected under 35 U.S.C. 103(a) as being unpatentable over Leban (U.S. Patent No. 7,049,024) in view of Blunk et al. (U.S. Patent No. 6,942,941).

Applicants respectfully disagree that claims 29, 31-34, 36, 37, 39-45, 47, 48, 54-56, and 58-70 are obvious in view of Leban and Blunk et al. For example, claim 47 recites:

47. (Previously Presented) A fuel cell comprising:
a first electrode comprising:
a non-conductive substrate, the non-conductive
substrate having a first electrode top surface, a first
electrode bottom surface, and a first electrode thickness
defined by a first distance between the first electrode top
surface and the first electrode bottom surface;
a first electrode aperture through the first electrode
thickness defined by a first electrode aperture surface;

- a second electrode comprising:
 - a second electrode top surface;
 - a second electrode bottom surface;
 - a second electrode thickness defined by a second distance between the second electrode top surface and the second electrode bottom surface;
 - a second electrode aperture through the second electrode thickness defined by a second electrode aperture surface;
- a first conductive layer provided on at least a portion of the first electrode top surface, at least a portion of the first electrode bottom surface, and one or more of at least a portion of the first electrode aperture surface, wherein the first conductive layer on the one or more of the at least a portion of the first electrode aperture surface provides an electrical connection between the first conductive layer on the first electrode top surface and the first conductive layer on the first electrode bottom surface;
- a second conductive layer provided on at least a portion of the second electrode top surface;
- a proton exchange member in electrical contact with and disposed between the first conductive layer and the second conductive layer, the proton exchange member including a catalyst;
- wherein, the first electrode aperture is at least partially aligned with the second electrode aperture, thereby exposing the proton exchange member.

Nothing in Leban or Blunk et al. appear to disclose many of the elements of claim 47 including, for example, “a first conductive layer provided on at least a portion of the first electrode top surface, at least a portion of the first electrode bottom surface, and one or more of at least a portion of the first electrode aperture surface, wherein the first conductive layer on the one or more of the at least a portion of the first electrode aperture surface provides an electrical connection between the first conductive layer on the first electrode top surface and the first conductive layer on the first electrode bottom surface”.

In the Office Action, the Examiner appears to rely on the bipolar plates of Blunk et al. as disclosing “a first conductive layer provided on at least a portion of the first electrode top surface, at least a portion of the first electrode bottom surface, and one or more of at least a portion of the first electrode aperture surface, wherein the first conductive layer on the one or more of the at least a portion of the first electrode aperture surface provides an electrical connection between the first conductive layer on the first electrode top surface and the first conductive layer on the first electrode bottom surface”.

Applicants respectfully disagree.

In the Office Action, the Examiner interprets the bipolar plate of Blunk et al. to be the same as the electrodes. Applicants respectfully disagree. Blunk et al. discloses “two individual proton exchange membrane (PEM) fuel cells connected to form a stack having a pair of membrane-electrode-assemblies (MEAs) 4, 6 separated from each other by an electrically conductive, liquid cooled, bipolar separator plate conductive element 8”. (Column 3, line 67 through column 4, line 5). Blunk et al. continues “a preferred bipolar separator plate 8 typically has two electrically active sides 20, 21 within the stack, each active side 20, 21 respectively facing a separate MEA 4, 6 with opposite charges that are separated, hence so-called ‘bipolar’ plate”. (Column 4, lines 7-12). As such, the MEAs 4 and 6 would appear to correspond to the electrodes of Leban and the bipolar separator plate would appear to correspond to the proton exchange membrane separating the electrodes. Thus, it is not understood how the bipolar separator plate is considered the claimed electrodes, as suggested by the Examiner, when Blunk et al. clearly teaches the bipolar separator plate separating the electrode assemblies.

Further, as noted above, the opposite charges of the bipolar separator plate are separated, which is clearly shown in Figures 4-6 of Blunk et al. Hence, nothing in Blunk et al. appears to disclose a first conductive layer provided on at least a portion of one or more of at least a portion of the first electrode aperture surface that provides an electrical connection between the first conductive layer on the first electrode top surface and the first conductive layer on the first electrode bottom surface.

Further, even if the bipolar plates of Blunk et al. could be considered as teaching the claimed first electrode and second electrode (which Applicants believe they do not), Applicants respectfully assert that there is no reason to modify the teaching of Leban to include the bipolar plates of Blunk et al. As understood from the Supreme Court’s decision under KSR, there must be some reason to make the claimed combination.

MPEP § 2141 states:

The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR* noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. The Court quoting *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006), stated that “[R]ejections on obviousness cannot be sustained by mere

conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 550 U.S. at ___, 82 USPQ2d at 1396.

(Emphasis added). The Office Action states “it would be desirable to use conductively coated polymer plates, such as those of Blunk et al., instead of entirely conductive plates, such as those of Leban, since such a substitution may result in a lighter fuel cell in the instance that the coated plates of Blunk et al. are lighter than the plates of Leban, or in a less expensive fuel cell in the instance that the materials of the plates of Blunk et al. are less expensive than those of Leban”. Clearly this assertion does not provide the required articulated reasoning with rational underpinning to support the legal conclusion of obviousness, as required by *KSR*. There is no indication that the proposed substitution would result in a lighter fuel cell or a less expensive fuel cell as argued by the Examiner. For these and other reasons, claim 47, as well as all claims dependent therefrom, are believed to be clearly patentable over Leban and Blunk et al.

Despite the foregoing, and to advance prosecution in a timely manner, enclosed herewith is a declaration under 37 C.F.R. § 1.131 showing completion of the invention prior to the April 30, 2003 filing date of Leban. It is believed that the enclosed 1.131 declaration removes the Leban patent as a reference. Additionally, Blunk et al. was filed on August 6, 2003, which is after the filing date of Leban. As such, it is believed that the 1.131 declaration also removes the Blunk et al. patent as a reference. For these and other reasons, all pending claims 29, 31-34, 36, 37, 39-45, 47, 48, 54-56, and 58-70 are believed to be patentable over Leban in view of Blunk et al. Applicants note that the enclosed 1.131 declaration is being filed herewith without the inventors’ signatures. Applicants will submit a signed copy of the 1.131 declaration as soon as all signatures have been obtained.

In paragraph 8 of the Office Action, claims 49-53 were rejected under 35 U.S.C. 103(a) as being unpatentable over Leban in view of Blunk et al., and further in view of Badding et al. (U.S. Publication No. 2002/0102450). After careful review, Applicants respectfully disagree. As discussed previously, claim 47 is believed to be patentable over Leban and Blunk et al. and nothing in Badding et al. appears to remedy the noted shortcomings. Also, the 1.131 declaration, showing completing of the instant

invention prior to April 30, 2003, removes the Leban and Blunk et al. patents as references. Therefore, for at least these reasons, claims 49-53, which depend from claim 47 and include significant additional distinguishing features, are believed to be clearly patentable over Leban in view of Blunk et al. and further in view of Badding et al.

Conclusion

In view of the foregoing, all pending claims are believed to be in a condition for allowance. Reconsideration and withdrawal of the rejection are respectfully requested. If a telephone conference might be of assistance, the Examiner is encouraged to contact the undersigned attorney at (612) 359-9348.

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Respectfully Submitted,


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